

GEOG * 3110 - BIOGEOGRAPHY

Class Meetings: Monday, Wednesday, & 1:30 PM - 2:20 PM, ANNU 156

Instructor: Ze'ev Gedalof (zgedalof@uoguelph.ca)

Office Hours: Monday, Wednesday, & Friday 11:00 AM – Noon, or by appointment (HUTT 356).

Graduate Teaching Assistant: David Pashinski

Office Hours: TBA, Hutt 235

Therapy Dog(s): TBD.

REQUIRED TEXT

There is no required text for the course. Readings will be taken from journal articles, technical reports, and books, and will be made available via CourseLink.

OVERVIEW

This course is the third in a sequence of four related courses in Physical Geography. The first course (GEOG*1300/1350) laid the foundations with an introduction to the processes and resulting patterns in the physical environment. The second course (GEOG*2110) examined biophysical processes (energy, water and nutrient flows) in more detail as well as relationships between the components (climate, soils, vegetation) of the biophysical environment. This course (GEOG*3110) provides a more detailed overview of biogeography – the study of the distribution of plants and animals across the Earth's surface. This field borrows and expands upon principles from Ecology, Biology, and Physical Geography. We will spend considerable time learning about ecosystem processes that impact both fauna and flora. Topics covered in this course include succession, disturbance, old-growth forests, biodiversity, island biogeography, habitat fragmentation, species introductions and biological control. For each topic, we will be examining past and current theories, controversies, empirical evidence and implications for resource management. By the end of this course, each of you should have a working knowledge of Biogeography that will broaden your scope of knowledge in the Geosciences, and I hope you will gain a better understanding of the natural world around you. The final course in the sequence is GEOG*4110 Environmental Systems Analysis – which synthesizes ideas from biogeography, hydrology, geomorphology, and climatology.

OBJECTIVES

- To learn and critically evaluate the basic principles of biogeography
- To develop literacy in biogeographical concepts as they apply to current environmental issues
- To learn basic quantitative techniques for the analysis of biogeographical data.

APPROACH

Each topic will be covered through a combination of readings, lectures, discussions, and individual assignments.

EXPECTATIONS

Since class discussions and written assignments will be based on the assigned readings, students are expected to have done the appropriate readings prior to the start of each topic. Discussions may involve students being called on to read prepared answers to questions on the readings. All assignments and final exam questions will be based on text readings, lectures and class discussions.

The use of digital devices (phones, tablets, laptops, etc.) for any purpose other than note-taking is not permitted during class time unless you are sitting where no other students can see your screen. This is because the science shows that you distract the people around you more than you distract yourself and that's just not fair to them.

[See here for details](#)

I do not make my PowerPoint files available on CourseLink. There are many reasons for this, but it boils down to two main considerations: You learn more if I don't provide them; and much of the material I present is copyrighted and I am not allowed to distribute it outside of the classroom.

The sharing of electronic files, other than your lecture notes (e.g. lab assignments, graphs, essays) is strictly prohibited and will lead to a lot of paperwork and unwanted time with the Associate Dean Academic.

COURSE EVALUATION

- *Short Written Assignments.* Students will be required to submit four short (2-3 page) expository essays based on assigned readings and in-class discussions, of which the best three will contribute to your final grade.
- *Laboratory Exercises.* Students will be required to complete two laboratory exercises, and submit a report documenting their analyses and discussing the findings.
- There will be a *Midterm Examination* composed of short answer questions, and a *Final Examination* composed of essay questions. The midterm exam will be held in class on Monday, October 31st.
- The final exam is **Wednesday, December 7 11:30 AM - 1:30 PM** Room TBA.

GRADING

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|----------------------|------|
| Written Assignments | 30 % |
| Laboratory Exercises | 30 % |
| Mid-term Examination | 10 % |
| Final Examination | 30 % |

All assignments must be submitted through Dropbox on Courselink. Late assignments (without prior approval) will be penalized at a rate of 10 percent of the value of the assignment per class day. This course uses Turnitin to help encourage academic integrity.

COMMUNICATION

This course uses ~~WebCT Blackboard D2L~~ CourseLink as the primary tool for communication and distribution of course material.

All email correspondence will be sent to your University of Guelph email address. I normally respond to student inquiries during my office hours. I do not normally reply to messages from off-campus email addresses. Only messages and postings that are appropriately professional will be responded to. For example, I ignore emails that begin “Hey,” or that include texting lingo; I’m too old for that.

University of Guelph Policy Statements:

E-mail Communication

As per university regulations, all students are required to check their <mail.uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. [See the undergraduate calendar for information on regulations and procedures for Academic Consideration.](#)

Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day, **Friday November 1, 2018**; The regulations and procedures for [Dropping Courses](#) are available in the Undergraduate Calendar.

Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance, and not later than the 40th Class Day.

More information: www.uoguelph.ca/sas

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

[The Academic Misconduct Policy is detailed in the Undergraduate Calendar.](#)

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources

The [Academic Calendars](#) are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.

GEOG*3110 PROPOSED READING LIST

See CourseLink for potential revisions

- 1) **Introduction.**
None
- 2) **Science and resource management**
Hutchings, J. A., C. Walters, and R. L. Haedrich. (1997). Is scientific inquiry compatible with government information control? *Canadian Journal of Fisheries and Aquatic Sciences*. **54**: 1198-1210.
Mills, T.J. and R.N. Clark (2001). Roles of research scientists in natural resource decision-making. *Forest Ecology and Management*. **153**: 189-198.
- 3) **Physical and biological controls on species distributions**
Chapters 3 & 4 in MacDonald, G. (2002). *Biogeography: Space, Time and Life*. New York, Wiley.
- 4) **Biodiversity**
Cousins, S.H.. (1991) Species diversity measurement: Choosing the right index, *Trends in Ecology & Evolution*, **6**: 190 - 192.
Ehrlich, P. and A. Ehrlich (1981) The rivet poppers. *Extinction: The Causes and Consequences of the Disappearance of Species*. New York, Random House.
Gaston, K.J. and J.I. Spicer (1998). *Biodiversity: An Introduction*. Malden, MA, USA, Blackwell. [pages 1-11 only]
Zavaleta, E.S., and K.B. Hulvey. (2004). Realistic species losses disproportionately reduce grassland resistance to biological invaders, *Science*, **306**: 1175 - 1177.
- 5) **Island Biogeography**
MacDonald, G. Chapter 14 in *Biogeography: Space, Time and Life*. New York, Wiley.
Laurance, W.F. (2008). Theory meets reality: How habitat fragmentation research has transcended island biogeographic theory. *Biological Conservation*. **141**: 1731-1744.
- 6) **Species introductions**
Alper, J. (2004). Wicked weed of the west. *Smithsonian*. URL: <http://www.smithsonianmagazine.com/issues/2004/december/phenomena.php>
Hierro, J.L., J.L. Maron and R.M. Callaway (2005). A biogeographical approach to plant invasions: the importance of studying exotics in their introduced and native range. *Journal of Ecology*. **93**: 5-15.
Williamson, M. and A. Fitter (1996). The Varying Success of Invaders. *Ecology*. **77**: 1661 - 1666.
- 7) **Community organization**
Lortie, C.J., R.W. Brooker, P. Choler, Z. Kikvidze, R. Michalet, F.I. Pugnaire and R.M. Callaway (2004). Rethinking plant community theory. *Oikos*. **107**: 433-438.
Matthews, J.A. (1996). Classics in Physical Geography Revisited: The individualistic concept of the plant association. *Progress in Physical Geography*. **20**: 193-203.

- 8) **Succession**
Colinvaux, P. (1993). Ecological succession. Pages 418-430 in *Ecology 2*. John Wiley & Sons, Inc. New York, New York, USA.
Fastie, C. L. (1995). Causes and ecosystem consequences of multiple pathways of primary succession at Glacier Bay, Alaska. *Ecology* **76**:1899-1916.
- 9) **Disturbance & Old Growth**
Franklin, J.F. and T.A. Spies (1991). Composition, structure and function of old-growth Douglas-fir forests. *Wildlife and vegetation of unmanaged Douglas-fir forests. USDA Forest Service General Technical Report PNW-GTR 285*. L.F. Ruggiero, K.B. Aubry, A.B. Carey and M.H. Huff, Eds. Portland, OR, Pacific Northwest Research Station: 71 - 83.
Hunter, M.L. (1993). Natural fire regimes as spatial models for managing boreal forests, *Biological Conservation*, **65**: 115 - 120.
Hunter, M.L. and A. S. White. (1997). Ecological thresholds and the definition of old-growth forest stands. *Natural Areas Journal* **17**: 292-296.
Sprugel, D.C. (1991). Disturbance, equilibrium, and environmental variability: what is 'natural' vegetation in a changing environment, *Biological Conservation*, **58**, 1-8.
- 10) **Climatic change**
Gedalof, Z. and A.A. Berg (2010). Tree ring evidence for a limited direct CO2 fertilization effect. *Global Biogeochemical Cycles*. **24**: GB3027, doi:10.1029/2009GB003699..
Shafer, S.L., P.J. Bartlein, and R.S. Thompson. (2001). Potential changes in the distributions of western North America tree and shrub taxa under future climate scenarios, *Ecosystems*, **4**: 200-215.